

#### 4.2.4.4 Water Resources

Construction and operation of the proposed long-term storage facilities at Pantex would affect water resources. All water required for construction or operation would be supplied from groundwater. The Ogallala Aquifer, which would be used to accommodate water requirements, has been projected to be adequate up to the year 2040 by TNRCC. The proposed facilities would be located outside the 100- and 500-year floodplain. During construction, treated sanitary wastewater would be discharged to the playas. During operations, all wastewater would be treated and either recycled or discharged to the playas. No wastewater would be discharged to non-playa surface waters during operation of the facilities. Thus, impacts to surface water quality are not expected. Stormwater runoff would be collected and treated, if necessary, before discharge to natural drainage channels. [Text deleted.] Table 4.2.4.4–1 presents No Action water resources uses and discharges and the potential changes to water resources at Pantex resulting from the long-term storage alternatives.

##### No Action Alternative

**Surface Water.** [Text deleted.] A description of the activities that would continue at Pantex is provided in Section 3.5. No demands on surface water supplies would occur. However, current wastewater discharges to Playas 1, 2, and possibly 4 of 478 million l/yr (126 million gal/yr) would decrease to approximately 141 million l/yr (37.3 million gal/yr) by the year 2005. Since surface water is not used at Pantex, there would be no impacts to surface water availability or quality from the this alternative.

**Groundwater.** Under this alternative, baseline conditions and operations, described in Section 3.5.4, would continue at the plant, and current groundwater usage of 836 million l/yr (221 million gal/yr) would decrease to 249 million l/yr (65.7 million gal/yr) by the year 2005. Groundwater used would continue to be withdrawn from the Ogallala Aquifer through wells located on the Pantex property. Under this alternative current groundwater restoration and characterization studies would continue. As part of the restoration activities for the perched aquifer, contaminated groundwater is pumped, treated, and reinjected back into this aquifer. This remediation effort should improve the quality of the perched aquifer groundwater. [Text deleted.]

##### Upgrade Alternative

###### *Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Plutonium Pits Subalternative*

###### *Modify Existing Zone 12 South Facilities for Continued Plutonium Storage*

**Surface Water.** There are no unique construction characteristics associated with water requirements and discharges from this alternative. No surface water would be withdrawn for any construction or operation activities associated with any of the proposed Pu storage upgraded facilities. Therefore, there would be no impacts to surface water availability. Nonhazardous wastewater generated during construction and operation of the upgraded Pu storage facilities would either be recycled or treated and released to the playas under the permit requirements. Approximately 3.1 million l/yr (0.83 million gal/yr) of nonhazardous wastewater would be generated during the construction phase. In 1994, Pantex averaged approximately 1.4 million l/day (370,000 gal/day) of wastewater discharge to the playas. This quantity is expected to decrease in the future. Discharge of this additional wastewater to playas would not result in exceedance of the TNRCC-permitted monthly average maximum limit of 2.46 million l/day (650,000 gal/day).

During operation, utility, process, and sanitary wastewater and cooling system blowdown for the upgraded Pu storage facilities would either be recycled or treated and discharged into playas. Approximately 12.9 million l/yr (3.4 million gal/yr) of sanitary wastewater would be processed using existing and planned liquid nonhazardous waste facilities during operation; exceedance of the discharge limitation is not expected. This amount would

represent a 9.1 percent increase in the amount being discharged. The treated effluent would be monitored to comply with the requirements. The extent to which treated effluent or stormwater would be recycled for reuse within the facility would be determined during site-specific studies.

The facility to be upgraded is located in Zone 12. Since 100-year, 500-year, or standard project flood boundaries are not located in Zone 12, there will be no impacts to floodplains. No construction would occur in areas delineated as 100-year floodplains.

**Groundwater.** All water required for construction and operation would be supplied from groundwater. The Ogallala Aquifer, which is the source of water for operations at Pantex, has been projected to be adequate up to the year 2040 by the TNRCC. Construction and operation water requirements for the upgraded Pu storage facilities are small relative to the total water in aquifer storage, which for the year 2010 has been estimated at 287 trillion l (76 trillion gal) (PX WDB 1993a:1). As shown in Table 4.2.4.4-1, construction of the proposed upgraded facilities would require 6.4 million l/yr (1.7 million gal/yr) of water, which represents approximately a 2.6-percent increase over the projected No Action groundwater usage. Regional groundwater levels would have minimal impacts.

Previous studies have shown that when the Amarillo City Well Field pumped 18.5 billion l/yr (4.9 billion gal/yr) from the Ogallala aquifer, an average of 1.8-m/yr (5.9-ft/yr) decline in the water table occurred over a 10-year period in the local well field area. This water level decline caused a shift in the groundwater flow direction beneath Pantex. Operating the proposed upgraded Pu storage facilities at Pantex would require 27.5 million l/yr (7.3 million gal/yr), resulting in a minimal drawdown representing 1.4 percent of the available groundwater (1,900 million l/yr [502 million gal/yr]). This additional groundwater withdrawal would cumulatively add to the existing decline in water levels of the Ogallala Aquifer. However, there should be minimal impacts to regional groundwater levels from this additional withdrawal. The total water withdrawal including this alternative would be 276.4 million l/yr (73 million gal/yr) which, because of expected cutbacks in other programs, would be 67 percent less than what is currently being withdrawn (836 million l/yr [221 million gal/yr]) from the Ogallala Aquifer by Pantex.

Construction and operation of the proposed upgraded Pu storage facilities would not result in direct discharges to groundwater, so contamination of the Ogallala Aquifer is not expected. Treated wastewater discharged to playas, however, could percolate downward into the groundwater of the near surface aquifer. This water would be monitored according to requirements and would not be discharged to the playas until contaminant levels were within the limits specified by the TNRCC. Since the supply wells located in the area withdraw potable water from the deep Ogallala Aquifer, the existing plume in the near-surface aquifer should not be affected by the upgraded Pu storage facilities. Pantex will continue to evaluate groundwater contamination in both the perched and Ogallala aquifers.

### ***Upgrade Without Rocky Flats Environmental Technology Site Plutonium or Los Alamos National Laboratory Plutonium Subalternative***

#### ***Modify Existing Zone 12 South Facilities for Continued Plutonium Storage***

The Upgrade Without RFETS Pu or LANL Pu Subalternative is similar to the Upgrade With RFETS Pu Pits Subalternative because the modified facilities in Zone 12 South would be designed with adequate capacity to store all of the RFETS Pu pits. No additional resources would be required and therefore the impacts would be the same.

***Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative***

***Modify Existing Zone 12 South Facilities for Continued Plutonium Storage***

The annual water requirements during construction and operation are 80 million l/yr (21.1 million gal/yr) and 110 million l/yr (29.1 million gal/yr), respectively. These additional requirements represent 32.1- and 44.2-percent increases, respectively, in the projected No Action withdrawals from the Ogallala Aquifer. The quantity required for operation represents 5.8 percent of the available groundwater (1,900 million l/yr [502 million gal/yr]). This additional groundwater withdrawal would cumulatively add to the existing decline in water levels of the Ogallala Aquifer. However, there should be minimal impacts to regional groundwater levels from this additional withdrawal. The total water withdrawal including this alternative would be 359 million l/yr (94.8 million gal/yr), which, because of expected cutbacks in other programs, would be 57 percent less than what is currently being withdrawn (836 million l/yr [221 million gal/yr]) from the Ogallala Aquifer by Pantex.

**Consolidation Alternative**

***Construct New and Modify Existing Zone 12 South Facilities***

The water resource requirements and impacts for this alternative are identical to those discussed above for the Upgrade With All or Some RFETS Pu and LANL Pu Subalternative.

***Construct New Plutonium Storage Facility***

The Pu storage facility would be located in Zone 12 South. The impacts associated with this option are the same as those discussed above for the Pu consolidate through upgrading, with the following exceptions. The water requirements of this option are slightly less than those for consolidate through upgrading with RFETS and LANL material. This option would require approximately 85 million l/yr (22.5 million gal/yr) and 98 million l/yr (26 million gal/yr) of water for construction and operation, respectively. These additional requirements represent 34.1- and 39.4-percent increases, respectively, in the projected annual No Action withdrawals from the Ogallala Aquifer. [Text deleted.] The total water withdrawal including this alternative would be 347 million l/yr (91.7 million gal/yr), which, because of expected cutbacks in other programs, would be 58 percent less than what is currently being withdrawn (836 million l/yr [221 million gal/yr]) from the Ogallala Aquifer by Pantex.

Sanitary wastewater quantities generated during construction of this option would be the same as for the previous option and are approximately 8.0 million l/yr (2.1 million gal/yr). These effluents would be discharged to the playas under the permit. The maximum quantity of additional wastewater (approximately 0.03 million l/day [7,900 gal/day]) would not cause any exceedances of the maximum limit of 3.1 million l/day (820,000 gal/day). During operations, wastewater would be recycled. Since surface water would not be used for this option, no impacts to surface water availability would occur.

**Collocation Alternative**

***Construct New Plutonium and Highly Enriched Uranium Storage Facilities***

Because the collocated storage facilities would be located in the same area as the new Pu storage facility (Zone 12 of Pantex), the impacts associated with it are the same as those discussed above, with the following exceptions. The water requirements for construction and operation of this option are greater than those for the previous options. This option would require approximately 104.7 million l/yr (27.7 million gal/yr) and 130 million l/yr (34 million gal/yr) for construction and operation, respectively. These additional requirements

represent 42- and 52.2-percent increases, respectively, in the projected No Action annual groundwater withdrawals from the Ogallala Aquifer and would be 5.5- and 6.8-percent of the available groundwater (1,900 million l/yr [502 million gal/yr]). [Text deleted.] The total water withdrawal including this alternative would be 379 million l/yr (100 million gal/yr) which would be 55 percent less than what is currently being withdrawn (836 million l/yr [221 million gal/yr]) from the Ogallala Aquifer by Pantex.

Sanitary wastewater quantities generated during construction would be approximately 12.2 million l/yr (3.2 million gal/yr); this water would be treated and discharged to the playas. For the same reasons as discussed for the previous option, no exceedances of the discharge limit would be expected. During operations, all wastewater would be recycled, causing no impacts.

Although the expected drawdowns caused by withdrawing the water required for the potential long-term Pu storage options are relatively small, the overall decline of groundwater levels in the Amarillo area is of concern. Groundwater conservation measures that could be considered include limiting groundwater production hours, installing dripless faucets, and reusing process water. In addition, to alleviate some of the effects from pumping groundwater from the Ogallala Aquifer, the city of Amarillo is considering supplying treated wastewater to Pantex for industrial use from the Hollywood Road Wastewater Treatment Plant. However, details of this mitigation measure have not been determined. Mitigation measures to reduce wastewater seepage and protect groundwater quality could include building lined evaporation ponds.

#### **Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials**

Water resource impacts for construction and operation for this subalternative are expected to be slightly less than those discussed for the No Action Alternative, the Upgrade Alternative, the Consolidation Alternative, and the Collocation Alternative because of the reduction in the amount of material. [Text deleted.]

#### **Phaseout**

If the current Pu storage mission at Pantex is phased out, groundwater withdrawals from the Ogallala aquifer and nonhazardous wastewater discharge to playas would decrease by negligible quantities. By decreasing groundwater withdrawals, however, Pantex would lessen its contribution to the declining groundwater levels of the Ogallala Aquifer by a very small amount. Reducing wastewater discharges to the playas by this quantity should not cause any noticeable impacts.

[Text deleted.]